

## **METHOD AND DEVICE FOR IMPLEMENTING PORTABLE GUIDE AND GUARD SYSTEM**

### **BACKGROUND OF THE INVENTION**

#### **1. Field of the invention**

5       The present invention relates to a method and a device for implementing a portable guide and guard system. The portable guide and guard system comprises a 3G wireless mobile communication function and utilizes functions of signal exchange and relay process of the 3G wireless communication system, which is going to be imported, so as to cooperate with a service center which 10     combines various functions of Internet. The service center constructs the operation architecture and service mode in a manner of providing the service through voice signal depending on an AV (audio/video) signal received by the portable guide and guard device.

#### **2. DESCRIPTION OF THE PRIOR ART**

15     For tourists all over the world, when starting an expected traveling in a foreign country using different language, they might be perplexed by the different

language and different culture. In addition, people who might be blind, dumb or needed to be protected/take care or the security/guard will need services such as foreign language communication, translation, guiding, consulting, live videoing, personal security monitoring or remote assistance. However, presently, the

5 technique and product, even the 3G wireless mobile communication system and the peripheral thereof which will be popularized, are still insufficient for these demands.

Followings are the reasons why the functions and applications of 3G wireless mobile communication system 3G cannot satisfy the above-mentioned users and

10 the demands thereof:

1. Because the purpose of 3G mobile phone 3G is to transmit the audio/video signal to the connected opposite side and receive the same signal therefrom, it is designed to be aimed at the operation of the user and not designed for capturing external AV signal.
- 15 2. The broadcasting of speaker and sound gathering of microphone of 3G mobile phone are designed for short-range operation and not designed for simultaneously capturing sounds of the user and external environment.

Moreover, external hands free handset is generally set to put in the car or on the table and not suitable to be hitched on the neck for receiving sounds from the user and simultaneously the external environment. Furthermore, the additional device on the neck will cause inconvenience for the user.

- 5     3. Presently, the video function of the 3G mobile phone in the market is achieved by a camera with fixed focus and diaphragm depending on different purposes and is only for satisfying the purpose of personal visual mobile phone. Therefore, the image processing ability for different situations such as long distance signboard, little distance menu and using at night or under dark light
- 10    might be insufficient. However, if adopting an auto-focusing and diaphragm adjustable camera, it will increase the volume and weight of the mobile phone so as to disobey the principle of light, thin, shot and small for the modern product and the demand of the customer.

4. The three reasons described above are comparisons aimed at the device for
- 15    the subscriber, and the other reason is related to the operation system. Besides the demand of the relay function of the communication connecting system, it still needs a remote service center which can receive the AV signal

from the user and transmit voice signal and provide related services.

Through employing the complete system construction and operation of the service center, the operation and service of the whole portable guide and guard system could be constructed completely.

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## SUMMARY OF THE INVENTION

- The biggest originality and breakthrough of the implementing method that is constructed by a device having the portable guide and guard function, the communication connecting system and information service station is that it utilizes almost ubiquitous 3G wireless mobile communication system and the function thereof to construct a biggest, most economic, most convenient network for real time translation, guiding, monitoring and information providing. Therefore, under the operation mode of effectively combining the communication and information according to the present invention, the services such as personal tour guiding and security that must be achieved originally by human labor or the functions and demands that can not be achieved by the present products can achieve more satisfying. Thus, the practical value created thereby also goes deep into all

strata.

Concluding the implementing method constructed by a device having the portable guide and guard function, the communication connecting system and information service station can provide novel services and functions as follows:

- 5     1. Assist the user to communicate in foreign language.
2. Provide the services of guiding and consulting for the user.
3. Replace the user to search, sieve, explain and utilize the information by the service center.
4. Monitor the spot of the user and protect the personal safety thereof.
- 10    5. Provide emergency assistance service for the user.
6. Provide the connection among the user, the service personnel and the indicated third party for connection.

The features and efficiencies of the preferred embodiments according to the present invention are further described hereafter coordinating with the following figures.

## BRIEF DESCRIPTION OF THE DRAWINGS

The drawings disclose an illustrative embodiment of the present invention which serves to exemplify the various advantages and objects hereof, and are as follows:

5 Fig. 1 is a block diagram showing an operation architecture of an implement method and device in a portable guide and guard system;

Fig. 2 is a structural block diagram showing a portable guide and guard device in a portable guide and guard system according to the present invention (namely a structural drawing showing internal units of an independent portable 10 guide and guard device);

Fig. 3 is a schematic view showing a simplified appearance of an independent portable guide and guard device in a preferred embodiment according to the present invention;

Fig. 4 is a schematic view showing a simplified appearance of a separate 15 portable guide and guard device, which is constituted by a 3G mobile phone and an external video/audio input/output device, in a preferred embodiment according

to the present invention;

Fig. 5 is a block diagram showing an operation architecture of a service center in the portable guide and guard system according to the present invention;

Fig. 6 is a flow chart showing a basic interaction while a user employs a  
5 portable guide and guard device to contact with service personnel in a service center according to the present invention;

Fig. 7 is a flow chart showing the processing procedures of the signal while the user operates the independent portable guide and guard device according to the present invention;

10 Fig. 8 is a flow chart showing the processing procedures of the signal while the user operates the 3G mobile phone of the separate portable guide and guard device according to the present invention;

Fig. 9 is a flow chart showing an emergency calling system and the processing procedures of the signal thereof while the user presses an emergency  
15 button of the independent portable guide and guard device in a preferred embodiment according to the present invention;

Fig. 10 is a flow chart showing the emergency measures and the processing

procedures of the signal thereof while the service center receives an emergency call according to the present invention;

Fig. 11 is a flow chart showing the operation system and the processing procedures of the signal thereof while the service center employs a function of  
5 emergency calling in a preferred embodiment according to the present invention;

Fig. 12 is a flow chart showing the operation system and the processing procedures of the signal thereof while the service center employs a function of emergency assisting in a preferred embodiment according to the present invention;

Fig. 13 is a flow chart showing a connecting service among three parties  
10 which is provided by the service center and the processing procedures of the signal thereof in a preferred embodiment according to the present invention;

Fig. 14 is a schematic view showing a main menu shown on a monitor of a human-machine interface within the service center according to the present invention;

15 Fig. 15 is a schematic view showing emergency assisting functions shown on a monitor in a preferred embodiment according to the present invention; and

Fig. 16 is a schematic view showing functions of connecting among three

parties shown on a monitor in a preferred embodiment according to the present invention.

### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

Please refer to Fig. 1 which illustrates a block diagram showing an operation architecture of an implement method and device in a portable guide and guard system according to the present invention. The portable guide and guard system includes a portable guide and guard device, a communication connecting system and an information service station.

The communication connecting system further includes a wireless communication network, a communication system and a wired communication network.

And, the information service station further includes a service center, an Internet connection network and Internet.

Moreover, according to Fig. 1, the portable guide and guard system with a complete function will include eight portions: (A) a portable guide and guard device 1, (B) a communication system 2, (C) a service center 3, (D) Internet 4, (E)

a user 5, (F) a wireless communication network 6, (G) a wired communication network, and (H) an Internet connection network 8. As to the connecting relation or correlation among these portions, it can be realized through the flow chart showing a basic interaction between a user and a service center shown in Fig. 6  
5 and the contents thereof.

These eight portions are described as follows:

A. Portable guide and guard device 1:

For implementing the portable guide and guard system, the portable guide and guard device 1 can be separated into two types:  
10 An independent portable guide and guard device (1A) which is an exclusive for the portable guide and guard system and is characterized in that all units needed for operating the portable guide and guard function are mounted in an independent device so that it will not need other devices.

A separate portable guide and guard device (1B) which is constituted by a 3G  
15 mobile phone 1c and an external video/audio input/output device 1b and is characterized in that units needed for implementing the portable guide and guard function are respectively mounted in 3G mobile phone 1c and in the external

video/audio input/output device 1b. On the other hand, it utilizes the existing units for video/audio transmission and processing and power supply in 3G mobile phone and further cooperates with the external video/audio input/output device 1b so as to be commensurate with the independent portable guide and guard device

- 5 1A. This design allows the user to add the external video/audio input/output device as needed. Therefore, not only the 3G mobile phone 1c can have two efficiencies, but also some relative units will be in the mobile phone 1c so as to reduce the volume and weight of the external video/audio input/output device 1b and further the price.

10 In the description of the present invention, if it is not specifically recited, the portable guide and guard device 1 generally refers to one of the independent portable guide and guard device 1A and the separate portable guide and guard device 1B. The description is relevant to the common functional options of the two and irrelevant to the arranging manner of the inner units.

15 Please refer to Fig. 2 which illustrates a structural block diagram showing the portable guide and guard device 1 in a portable guide and guard system according to the present invention. Fig. 2 simultaneously represents the

functional architecture of both the independent portable guide and guard device 1A and the separate portable guide and guard device 1B, and furthermore, because the independent portable guide and guard device 1A contains all the implement units, Fig. 2 also represents a structural drawing of the internal units of

5 the independent portable guide and guard device 1A. Hereafter, it takes the independent portable guide and guard device 1A as a representative for explaining the purpose and function of each internal unit and external unit and then it further explains the difference due to the arranging manners of the independent portable guide and guard device 1A and the separate portable guide

10 and guard device 1B.

The main six units of the independent portable guide and guard device 1A includes:

a. Mini-camera 11: The mini-camera at least includes an optical camera and an image processing element. After an external optical image captured by the

15 optical camera having an automatic focusing and an adjustable sensitization passes through the image processing element, an analog signal thereof is transformed into a digital signal which is then inputted into a central processing

unit for processing a signal output procedure.

b. Central processing unit 12: The central processing unit is mainly a computer component, wherein a video signal from the mini-camera 11 and an audio signal from a sound gathering unit 13, which are passed through the output signal procedure of the central processing unit, are transmitted to an antennal terminal 15 for emitting, and an external electromagnetic wave received by the antennal terminal 15 is decoded and then transmitted to a sound broadcasting unit (14) for broadcasting the sound.

c. Sound gathering unit 13: The sound gathering unit 13 includes a fixed and an external microphone accessories and a sound gathering element, wherein the fixed microphone which is positioned above a panel of the device for receiving the external sounds. An external sound received by the fixed microphone is transmitted to the sound gathering element for proceeding a signal processing. Besides, the sound gathering unit can also cooperate with an external earphone/microphone device. When both the fixed and the external microphone accessories are used, the sound gathering element will automatically proceed an echo eliminating function for avoiding the echo due

to the simultaneous operation of the two microphones.

d. Sound broadcasting unit 14: The sound broadcasting unit includes a fixed speaker, an external earphone and a sound broadcasting element positioned.

When a voice signal from a signal base station received by the antennal  
5 terminal 15 is processed by the sound broadcasting element, it will be transmitted to the speaker positioned above the panel of the device so as to broadcast the sound.

e. Antennal terminal 15: The antennal terminal includes an emitter, a receiver and an antenna. The function thereof is to emit an encoded signal from the  
10 central processing unit 12 which is electro-magnetically modulated by the emitter and transmit a wireless electromagnetic wave signal, which is from the communication system 2 through the wireless communication network 6 and then demodulated by the receiver, to the central processing unit 12 for signal decoding and processing other sequential procedures.

15 f. Power unit 16: The power unit is a super thin lithium battery or a high efficiency battery for providing all units the power.

The independent portable guide and guard device 1A has an individual

information such as an independent phone number, user's identification number, code or secret code. If the user needs to dial out, he can tell the service personnel 37 who he wants to contact and the service personnel will manually work a telephone switchboard. When the independent portable guide and guard

5 device 1A enters a normal mobile phone situation, a main computer 31 within the service center 3 will automatically stop the original portable guide and guard function and automatically recover the function until the user presses a portable guide and guard function button 13a for stop the communication by the phone.

Fig. 3 is schematic view showing a simplified appearance of an independent portable guide and guard device 1A in a preferred embodiment according to the present invention. All the elements in Fig. 3 are listed in Table 1. Table 1 is an explanation of the function and operation of the external elements of the independent portable guide and guard 1A in a preferred embodiment.

	Element/ Indicator	FUNCTION	EXPLANATION
external element	Power switch (15a)	Turn/off power supply	<p>1. Power on the power supply, which is provided by detachable battery (23a).</p> <p>2. Implement the standby sub-program, start to search the communication system station and confirm the signal of the communication system (2) is connectable so that the portable guide and guard device 1 enters the standby status.</p> <p>3. Under standby status, the portable guide and guard device 1 has the function of receiving the dialed-in phone call from the service center.</p> <p>4. Press this button under standby or using status, it will shut down the power.</p>
	Optical camera (11a)	Capture external optical image	Through the auto-focusing and optical sensing optical camera (11a), the external optical image can be captured, passed through an image processing element to transfer the analog signal into the digital signal and then inputted into the central processing unit (12) for processing signal output procedure.
	Fixed microphone (12a)	Receive external sounds	The fixed microphone is mounted on the panel of the device for receiving the external sound through a sound gathering element, and then

			after being processed, the signal is transmitted to the central processing unit (12).
	Speaker (21a)	Broadcast sound	The voice signal received by the antennal terminal (15) from the signal base station is processed by the broadcasting element and then transmitted to the speaker on the panel for broadcasting the sound.
	Portable guide and guard function button (13a)	Power on/off portable guide guard function	<p>1. Press this button as standby; the sub-program of power on the portable guide and guard function is initiated so as to send a signal for requesting to connect with service center. Then, the communication system (2) immediately builds the signal connection between the portable guide and guard device (1) and the service center (3).</p> <p>2. When entering the status under using, the portable guide and guard device can receive phone calls transferred from service center.</p> <p>3. Under using, it will implement the portable guide and guard function after pressing the button so as to go back to standby status.</p>
	Speaker mute button (17a)	Power on/off speaker mute function	Under using, the sound output of the speaker (21a) on the panel of the device can be closed. One more press, the sound output of the speaker (21a) can be recovered. The function of

			external microphone accessory will not be influenced.
	Volume regulating button (20a)	Regulate the volume of the speaker and the earphone	<p>1. Using method: press upper button for magnifying volume; press lower button for reducing volume.</p> <p>2. This button can simultaneously regulate the volume of speaker (21a) and external earphone.</p>
	Emergency calling button (22a)	<p>1. Power on power supply and portable guide and guard function</p> <p>2. Emergency calling service center for immediate help</p>	<p>1. Press this button as the portable guide and guard device (1) is turned off or standby, the power supply and the portable guide and guard function both can be automatically initiated so as to complete the connection with the service center (3).</p> <p>2. Simultaneously transmit the emergency calling signal. This signal will immediately induce an alarm bell and warning light on screen of the human-machine interface (36) in front of the service personnel (37).</p>
	Earphone/microphone plug (19a)	External earphone/microphone device	<p>1. The user utilizes the external earphone for communicating with service personnel (37) so as to reduce external interference. Through cooperating with speaker mute function, it can make the contactor to lose the sound response</p>

			<p>of the service personnel or the broadcasted music.</p> <p>2. By conversing through the external microphone accessory, the volume can be reduced and also reduce the external interference.</p>
	Antenna (14a)	Emit and receive wireless electro-magnetic wave	A soft antenna can be adopted and fitted into the chain (18a) so that the whole modeling of the portable guide and guard device (1) might not be destroyed and still can achieve the functions of signal receiving and transmitting.
indicator	Status indicator (16a)	Show status of power on, standby and connecting	<p>1. Standby: fixed frequency green light</p> <p>2. Connecting: orange light</p>
		Show insufficient power supply	When the remain power lower than 20 % or other set value, the lower power indictor will flash a red light at a fixed frequency
		Show mute status of speaker	Yellow light

Table 1

In addition, through Fig. 7 which is the flow chart showing the processing

procedures of the signal while the user operates the independent portable guide

and guard device 1A, it can be understood more completely.

For these preferred portable guide and guard devices 1, those skilled in the art could alter thereof depending on the spirit and the functional design of the present invention as follows:

- 5    1) The portable guide and guard device can be externally connected to the global locating apparatus and installed the processing functions needed therefore for capturing the location data of the portable guide and guard device, namely the user's location, and then transmitting the data to the service center for guiding or security monitor.
- 10   2) The portable guide and guard device can be fixed on a helmet, a car, a searchlight or other portable apparatus and cooperates with the external earphone/microphone. And, the portable guide and guard device also can be taken apart from the base of the apparatus, so that the angle of view will be better without influencing other missions, for example, for the security service
- 15      personnel.
- 3) The portable guide and guard device can also add the function and element of remote thereinto for controlling the angle of optical camera and telescopic

camera lens.

However, these equivalent alternations belong to the designable items of the present invention and still contained in the claim of the present invention.

The other device with the same function is to employ the existing 3G mobile phone 1c and an external device having a mini-camera and a microphone/speaker.

This external device having the mini-camera and the microphone/speaker is so called an “external video/audio input/output device 1b” in the present invention.

And, the assembly device of the 3G mobile phone and the external video/audio input/output device 1b is namely the “separate portable guide and guard device 1B” in the present invention.

Because this kind of external video/audio input/output device 1b belongs to the optional additional functions of 3G mobile phone, after the user completes the application to the service center 3, the service center 3 will take the telephone number of the 3G mobile phone 1c as the connecting identification number and enter the number and relative data of the member. Moreover, the service center

3 provides the settings for the user 5 services and simultaneously the serial number of the service center 3 to the applicant. When the user 5 first uses

portable guide and guard device, he has to first enter the functional selections of the 3G mobile phone 1c and then the sub-selection for the serial number for entering the serial number, and then this function can be used.

Please refer to Fig. 4, which is a schematic view showing a simplified 5 appearance of a 3G mobile phone 1c and the external device having the mini-camera and the microphone/speaker (the external video/audio input/output device 1b) in a preferred embodiment according to the present invention.

On this external video/audio input/output device 1b, besides the mini-camera 11b, the microphone 12b, and the speaker 13b, a power/AV signal line 15b and 10 plug thereof, the only button is an emergency calling button 14b. The main functions of the three units of the external video/audio input/output device 1b are described as follows:

a. Mini-camera 11b: The mini-camera includes an optical camera and an image processing element. The function thereof is that after an external optical 15 image captured by the optical camera having an automatic focusing and an adjustable sensitization passes through the image processing element, an analog signal thereof is transformed into a digital signal which is then inputted

into a central processing unit of the 3G mobile phone through the power/signal line 15b for processing a signal output procedure.

b. Microphone 12b: The microphone is a fixed one positioned above a panel of the external video/audio input/output device 1b for receiving the external sounds.

5 An external sound received by the fixed microphone is transmitted to the sound gathering element of the 3G mobile phone 1c through the power/signal line 15b and then to the central processing unit of the 3G mobile phone 1c for proceeding.

c. Speaker 13b: The speaker 13b is a fixed speaker positioned above a panel of the external video/audio input/output device 1b. The function thereof is that when a voice signal from a signal base station received by the antennal terminal 15 is processed by the sound broadcasting element of the 3G mobile phone 1c, it will be transmitted to the speaker 13b positioned above the panel of the external video/audio input/output device 1b through the power/signal line 15b so as to broadcast the sound.

d. Emergency calling button 14b: The emergency calling button 14b possesses a function of initiating the power supply for the 3G mobile phone and the portable

guide and guard. Namely, if the user presses the button under the situation that the plug of the power/signal line 15b is plugged into the 3G mobile phone but the power of the mobile phone is not turned on, the central processing unit of the 3G mobile phone 1c will automatically turn on the power after receiving 5 this signal, implement sub-programs and start to search the communication system base stations for confirming the signal connection therebetween.

Then, after the mobile phone is in the stand-by condition, the central processing unit of the 3G mobile phone 1c will again implement the sub-program of portable guide and guard, build the connection with the service 10 center 3 and send the emergency mayday signal. This signal will immediately induce an alarm bell and warning indicator in the human-machine interface 36 and be recognized by the service personnel 37 in front of the human-machine interface 36, so that the service personnel 37 will immediately notice the emergency situation of the user 5 and quickly provide the necessary 15 assistances.

Other units, buttons and indicators of the independent portable guide and guard device 1A are respectively replaced by relative units, buttons and indicators

of the 3G mobile phone, wherein each element is described in Table 2. Table 2 is a comparison of each unit, button, indicator and function and operation of the 3G mobile phone 1c and the external video/audio input/output device 1b with those of the independent portable guide and guard device 1A. In addition, 5 through Fig. 8 which is the flow chart showing the processing procedures while the user operates the 3G mobile phone 1c and the external video/audio input/output device 1b, it can be understood more completely.

Independent Portable Guide and Guard Device		Separate Portable Guide and Guard Device	
		External AV I/O device	3G Mobile Phone
Internal element			
	Mini-camera	Yes	No ( the original optical camera will has no function as implementing portable guide and guard function )
	Central processing unit	No	Yes ( all signals, data and control instructions are

			processed by 3G mobile phone )
Sound gathering unit	Only fixed microphone	Only external microphone accessory and sound gathering element	
Sound broadcasting unit	Only speaker	Only external earphone and broadcasting element	
Antennal terminal	No	Yes	
Power unit	No	Yes	
External button, plug and indicator	No  ( after the plug of the power/signal line is plugged therein, the power switch has the ability to initiate the power and then simultaneously turn on/off the power of 3G mobile phone )	Yes	
Portable guide and guard function button	No	This button is not existed but this function is existed (after the plug of the power/signal line of the external AV I/O device is	

			plugged into the socket of 3G mobile hone, this function can be turned on/off through the communicating button of the phone )
	Speaker mute button	No	This button is not existed but this function is existed ( can be turned on/off this function through the speaker mute sub-selection of the portable guide and guard function menu of 3G mobile phone )
	Volume regulating button	No	Yes
	Emergency calling button	Yes	No
	Earphone/microphone plug	No	Yes
	No	power/signal line(15b) and plug (16b)	Plug (16c) for power/signal line

	Status indicator	No	Yes
function	Phone call dial out or dial in ( should be transferred by the service center )	No	General wireless communication function of mobile phone
	No need ( set by the service center altogether )	No	The user has to previously self-set the serial number of the service center in the function menu of mobile phone so that this function can be used.

Table 2

The 3G mobile phone includes all needed units, buttons and indicator for implementing the portable guide and guard method as follows:

1) Central processing unit: All signals, data and control instructions in the external

5 video/audio input/output device 1b are processed by the central processing unit of the 3G mobile phone 1c.

2) Sound gathering unit: The sound gathering unit includes an external

microphone accessory and a sound gathering element. When the portable

guide and guard function is working, an external sound received by the microphone of the external video/audio input/output device 1b is inputted into the sound gathering element of the 3G mobile phone 1c through the power/signal line 15b and transmitted to the central processing unit of the 3G  
5 mobile phone 1c for proceeding a voice output processing, and, on the other hand, a voice from the microphone of the 3G mobile phone 1c is transmitted to the central processing unit of the 3G mobile phone 1c for proceeding the voice output processing. Furthermore, the sound gathering element has an ability of echo elimination which is initiated when the microphones of the external  
10 video/audio input/output device (1b) and the 3G mobile phone 1c are simultaneously operated so as to reduce an echo.

3) Sound broadcasting unit: The sound broadcasting unit includes an external earphone accessory and a broadcasting element. When the portable guide and guard function is working, a voice signal from the signal base station  
15 received by an antennal terminal of the 3G mobile phone 1c will be processed by the broadcasting element and then transmitted to the speaker 13b of the external video/audio input/output device 1b through the power/signal line 15b

for broadcasting said voice, and, on the other hand, a voice from a service center 3 will be received through the external earphone of the 3G mobile phone 1c.

- 4) Antennal terminal: All emissions and receipts of the wireless electromagnetic wave of the external video/audio input/output device 1b are processed by the antennal terminal 15c of the 3G mobile phone 1c.
- 5) Power unit: All power demanded by the external video/audio input/output device 1b is supplied by the battery of the of power unit of the 3G mobile phone 1c.
- 10 6) Power switch: After the plug of the power/signal line 15b of the external video/audio input/output device 1b is plugged into a socket of the 3G mobile phone, the power switch immediately has an ability to initiate a power supply, and then the external video/audio input/output device 1b will be synchronous to an operation of the power switch 12c of the 3G mobile phone 1c.
- 15 7) A function of power on/off the portable guide and guard: After the plug of the power/signal line 15b of the external video/audio input/output device 1b is plugged into the socket of the 3G mobile phone, the portable guide and guard

function is initiated/shut down through pressing a confirm button 11c of the 3G mobile phone 1c.

- 8) A speaker mute function: This function can be initiated/shut down through choosing a mute sub-selection in a menu of portable guide and guard of the 5 3G mobile phone since the 3G mobile phone doesn't own an independent button therefore.
- 9) Volume regulating button: A volume of the speaker of the external video/audio input/output device 1b can be controlled by the volume regulating button 13c of the 3G mobile phone 1c.
- 10 10) Earphone/microphone socket: the earphone/microphone can be externally plugged by an earphone/microphone accessory of the 3G mobile phone 1c to obtain a sound gathering function from the microphone and a sound broadcasting function from the earphone when the portable guide and guard function is under using.
- 15 Besides, the optical camera, fixed speaker and fixed microphone originally on the 3G mobile phone 1c are non-working, when the portable guide and guard function is under using.

B. Communication system 2:

As shown in Figs. 1 and 5, the operation of the whole portable guide and guard device 1 mainly relays on the wireless communication network 6 constructed by the telecommunication company which provides the 3G wireless communication service and the signal/main computer system thereof which implements the signal exchange and processing to be a signal transmission medium. The signal/main computer system for responding for the signal exchange and processing is namely the communication system 2 in the present invention, wherein the wireless communication network and the communication system are respectively the 3G wireless communication system.

The wireless communication network 6 is constituted by cellular wireless channels that are formed by thousands of base stations and responsible for implementing the signal connection of the 3G wireless communication device in the user terminal. All demands of the base stations will be relayed to an exchanger, and then the exchanger and the control and management center will implement the signal exchange and processing needed in this communication.

The base station and the exchanger are connected through the optical fiber, point-

to-point microwave connection or telephone line, and plural exchangers.

Furthermore, the control and management center will also be connected together

for managing the signal exchange and processing of all communication demands

within and outside the system and providing all kinds of cellular services to the

5 home system. The connection network among plural exchangers and the

communication apparatus, computer soft/hardware apparatus of control and

management center is namely the communication system 2 in the present

invention.

Because the whole system is built on the communication system 2 of the

10 same telecommunication company, the service centers 3 which are operated at

the same time will be respectively set by different organization or enterprise

according to different purposes (such as travel service, service for blind people or

mobile monitoring system of the security service firm). Therefore, when each

service center 3 applies this service to the telecommunication company, the

15 telecommunication company will give each service center an exclusive number

and the computer processing center within the telecommunication company will

also set this number therein. Of course, the system service provider of the 3G

mobile phone also can build a service center 3 by itself for providing this portable guide and guard service, or this portable guide and guard service can be provided by several service centers having identical or different properties, and thus, it will need different serial numbers. In the future operation, the communication system

- 5 2 also can take the serial number received by the service center 3 as an identification number, and the signal connection of the portable guide and guard device 1 will directly be handover to an designated service center 3 so that both sides can process the operation of the portable guide and guard device without adopting the telecommunication exchange processing which is applied in the
- 10 general dialing method.

The direct handover of the communication system 2 is namely a specific line connection mode between the communication system 2 and the wired communication network 7 of the service center 3. After the service dials into the communication system 2 which will then notify the service center 3, the main computer system 31 within the service center 3 will directly proceed and immediately connect to the human-machine interface 36 of the service personnel 37 which is designated by an assigning program so that the user can immediately

converse with the service personnel 37 almost without waiting. Namely, the processes of signal exchanging and processing of the communication system 2 eliminate the original procedures of waiting for communicating by the receiver and then connecting the line and signal processing steps needed therein. Moreover, 5 the telecommunication company of the communication system 2 also can save the communication channel, time and related cost which are consumed as waiting so as to achieve a high speed and high efficiency service. Unless the lines are busy, the communication system 2 won't send a busy sound or voice signal to the user who is operating the portable guide and guard device 1 for noticing the user 10 the busy situation, which is always happened in the general mobile phone.

#### C. Service center 3:

The architecture block of the service center 3 in a preferred embodiment according to the present invention is shown in Fig. 5. The main flow path of the system is as follows: after the signal exchange device 32 of the service center 3 captures and processes the image and sound signal of the user from the signal 15 connection between the communication system 2 and the service center 3, the signal will be transmitted to the main computer 31 for the sequential processing;

the main computer system 31 outputs the signal to the human-machine interface

36 in front of the service personnel 37 through the internal network 35 so that the

service personnel 37 can receive the live image and sound through the monitor

and earphone of the human-machine interface 36 and then provide services e.g.,

5 guiding and translation assistance for the user 5; and further the service personnel

37 can utilize the searching function for obtaining data from the database system

33 or the searching engine of the self-built website for capturing traveling or

related data from various website in Internet 4 so as to provide thereof to the user

5 or indicate the user. Following will be the description of main function of each

10 sub-system:

a. Main computer system 31: The main computer system 31 can be designed by

the methods of: adopting it as an independent computer component or

adopting it to incorporate the data processing and storing functions or parts

thereof of signal exchange device 32, database system 33, network service

15 server 34 or human-machine interface 36 so as to be a multi-functional

computer module.

Besides the main works of interface processing and system management

among all sub-systems described above, another main work is to set up and manage the self-built website by the service center 3. The functions of the website include: an brief introduction of company of the service center 3 and the service items, an on-line service interface for the personal web page of the user 5 and therewith the service center 3, a function of network searching engine and information collection and arrangement, on-line commercial publish of all cooperating companies, and function of super connection.

b. Signal exchange device 32: it is a network apparatus for implementing the connection between the service center 3 and the communication system 2 through the wired communication network 7 so as to exchange the information 10 within the service center 3.

c. Database system 33: it at least includes a central processor and a recording medium (such as hard discs), wherein the central processor can be utilized to process and then store the data bit into the data structure of the recording 15 medium or read the data from the data structure of the recording medium.

The data structure can be constructed through the database system in the prior art. Another function of the system is that all the input and output signal

can be stored therein for future viewing.

d. Network server 34: it is a hardware platform for the software of Internet access service especially for the user. The main work thereof is to build the website of the service center 3 within the main computer system 31 and provide the

5 needed signal access and processing for the 24 hours connection with the global information network.

e. Internal network 35: it is mainly to construct the signal connecting bridge between the main computer system 31 and plural human-machine interfaces 36 and belongs to parts of a general LAN (local area network).

10 f. Human-machine interface 36: it includes a computer mainframe, a monitor, a set of input device with a keyboard and a mouse and a set of external earphone/microphone device. Each service personnel is allotted a set of human-machine interface 36 device. Furthermore, for quickly and efficiently providing the user 5 related information and service by the service personnel, it 15 has to have a humanized appearance of picture and display format, and all the operation methods and flow paths are based on the principle that the service personnel can easily achieved. This operation condition can be achieved by

a program for the human-machine interface which can be designed through

the technique in the prior art. In addition, the main computer system 31 and

the human-machine interface 36 are typically a client-server model.

g. Service personnel 37: they belong to a link in the whole operation architecture

5 so as to search and sift data for the user 5 and are media of data illustration

and utilization. Then, the human-machine interface 36 is namely the tool for

the service personnel 37 to achieve the mission. Therefore, besides the

ability of computer and Internet operation, the service personnel 37 should

own the special ability for the provided service.

10 Another responsibility and work of the service personnel 37 is to monitor

the spot of the user 5 so as to protect the safety thereof. They have to notice

the relative organization or people in a shortest time so as to effectively protect

the user and provide the target needed assistance.

For some function-simplified architectures, they might only own one service

15 center for the information service station without Internet connection network and

Internet. This kind of service center eliminates the sub-system of network server

and the service center website built by the main computer and won't provide the

functions such as Internet information and on-line service. Another method for building the service center 3 is to employ the telecommunication company which provides the communication connecting service to provide this service. This method can have a best efficiency on building the wired communication network 7.

- 5 In this mode, the user 5 more possibly obtains this service from the already owned separate portable guide and guard device 1B. Still another service center 3 is to be built departed from the telecommunication company by independent enterprise or organization, and then the service center 3 can request the telecommunication company to provide the communication connecting service. This kind of service
- 10 center 3 might provide specialized service items.

The preferred embodiment for each sub-system of the service center 3 described above can be combined or subdivided depending on the spirit and functional design of the present invention and simplified or complicated various operations and flow paths thereof for adapting various applications by one skilled in the art and still fall into the range of the present invention. Also, the service center built based on the implement method of the portable guide and guard system of the present invention is included in claims appended, no matter

incorporating into the telecommunication company or independently departing therefrom.

#### D. Internet 4

Internet 4 is a collection of large amount of computer networks which are connected to each other, and depending on IP (Internet Protocol) and TCP (Transmission Control Protocol), the encoding and decoding of the signals on Internet can be done so as to be accessed. Just because huge data and all kinds of on-line services can be obtained from Internet 4, for the user 5 in the foreign country for traveling, it can satisfy most demands. This is also one of the practical values provided by the implement method constructed by the portable guide and guard device 1 and the communication connecting system and the information station.

#### E. User 5

The user 5 is namely the person who utilizes the communication connecting system provided by the portable guide and guard device 1 to obtain needed information and related service from the service personnel 37 within the service center 3. Actually, a person who has demands of foreign language

communicating, guiding, consulting, information providing, monitoring, videoing and security defending etc. might become the user 5 of the portable guide and guard device 1. In the future, the possible people for service providing might be foreign tourists, blind people, dumb people, women always late for home, people  
5 needed for guarding, security service personnel and commercial firms always need to service foreign tourists.

#### E. Wireless communication network 6

The portable guide and guard device 1 and the communication system 2 of the telecommunication company are namely communicated by wireless communication function for transmitting the electromagnetic wave so as to achieve the purpose of communication connection.  
10

#### F. Wired communication network 7

The signal connection between the communication system 2 and the service center 3 is firstly the wireless communication network 6 which passes through the relay function of the signal exchange in the communication system 2 and then is altered the wired communication connecting method so as to build the connection therebetween and implement the portable guide and guard operation.  
15

Meanwhile, the connecting line of the wired communication connecting method is namely the wired communication network 7 of the present invention.

#### G. Internet connection network 8

Internet connection network 8 utilizes WAN (Wide Area Network) to connect  
5 to local ISP through previously bought or rent bandwidth and then gradually connect to the large-scale framework of the network so as to connect with websites or subscribers all over the world. The method through WAN (Wide Area Network) to connect to local ISP is identical to the third network communication connecting method described in the wire communication network  
10 7, namely a line (generally a rent T3 or T4 special line) pulled from the network server 34 within the service center 3 is connected to POP of the fixed telephone network and then connected to local ISP through the standard exchange apparatus of the telecommunication company. However, the information access over Internet must begin at registering the IP address and DNS address of the  
15 website and then set in the network server so that the access can be done.

The contents described above are mainly employed to explain the implementing method constituted by the portable guide and guard device 1, the

communication connecting system and the information station, wherein the operation architecture and the functions of the main units or the sub-systems give the whole system a clear outline. To be followed is a detailed description of detail operation flow path and each step thereof.

- 5 Fig. 6 is a flow chart showing a basic interaction while a user 5 employs a portable guide and guard device 1 to contact with a service center 3 according to the present invention. This flow path is namely the main operation mode of the whole portable guide and guard device 1 and the operation system.

- Fig. 7 is a flow chart showing the processing procedures of the signal while  
10 the user 5 operates the independent portable guide and guard device 1A in a preferred embodiment according to the present invention.

- Fig. 8 is a flow chart showing the processing procedures of the signal while  
the user operates the 3G mobile phone 1c with the external video/audio  
input/output device 1b of the separate portable guide and guard device 1B in a  
15 preferred embodiment according to the present invention.

- Fig. 9 is a flow chart showing an emergency calling system and the processing procedures of the signal thereof while the user 5 presses the

emergency button 22a of the independent portable guide and guard device 1A in  
a preferred embodiment according to the present invention.

Fig. 10 is a flow chart showing the emergency measures and the processing  
procedures of the signal thereof while the service center receives an emergency  
call.

Fig. 11 is a flow chart showing the operation system and the processing  
procedures of the signal thereof while the service center employs a function of  
emergency calling in a preferred embodiment according to the present invention.

This flow path is namely a detailed description of step 502 in Fig. 10.

Fig. 12 is a flow chart showing the operation system and the processing  
procedures of the signal thereof while the service center employs a function of  
emergency assisting in a preferred embodiment according to the present invention.

This flow path is namely the detailed description of the step of emergency  
assisting.

Figs. 13-1 and 13-2 are a flow chart showing a connecting service among  
three parties which is provided by the service center through connecting the  
wireless communication ability thereof and of the user to a designated phone or

web site and the processing procedures of the signal thereof in a preferred embodiment according to the present invention.

Fig. 14 is a schematic view showing a main menu shown on a monitor of a human-machine interface<sup>36</sup> within the service center 3 according to the present  
5 invention.

Fig. 15 is a schematic view showing emergency assisting functions shown on a monitor in a preferred embodiment according to the present invention.

Fig. 16 is a schematic view showing functions of connecting among three parties shown on a monitor in a preferred embodiment according to the present  
10 invention.

Many changes and modifications in the above described embodiment of the invention can, of course, be carried out without departing from the scope thereof.

Accordingly, to promote the progress in science and the useful arts, the invention is disclosed and is intended to be limited only by the scope of the appended  
15 claims.